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Agenda Item 3

April 11, 2011

TO: MEMBERS OF THE INVESTMENT COMMITTEE

I. SUBJECT: Fund Policy Benchmarks

II. PROGRAM: Total Fund

III. RECOMMENDATION: That the Investment Committee approve the revised benchmarks listed on Table 1 and described in this memo

IV. ANALYSIS:

Summary

The purpose of this item is to comprehensively review investment benchmarks for all asset classes that would constitute the total fund policy portfolio. This review is necessitated by Committee approval of a new asset reclassification in December 2010. Current and proposed investment benchmarks are listed on Table 1. The associated revised investment policies will be presented to the Investment Policy Subcommittee in April 2011 and to the Investment Committee in June, for an effective date of July.

Wilshire, PCA, and Meketa Investment Group opinion letters are included as Attachments 1, 2, and 3 respectively.

Table 1. Current and Proposed Benchmarks

Asset	Current Benchmark	Proposed Benchmark
GROWTH	NA	(49/63) * public equity benchmark + (14/63) * AIM benchmark
Public Equity	95% * Custom FTSE All World TMI + 5% * (T-bills + 5%)	100% Custom FTSE All World TMI
AIM (Private Equity)	Wilshire 2500 + 3%, lagged one qtr	(2/3 FTSE U.S. TMI + 1/3 FTSE All World ex-U.S. TMI) + 3%, lagged 1 qtr
REAL	NA	(10/13) * real estate benchmark + (2/13) * infrastructure benchmark + (1/13) * forestland benchmark
Real Estate	90% * (NCREIF NPI +2%) + 10% * FTSE EPRA NAREIT Developed, all lagged one qtr	NCREIF ODCE, lagged one qtr
Forestland	CPI + 5%, lagged one qtr	NCREIF Timberland, lagged one qtr
Infrastructure	CPI + 5%, lagged one qtr	CPI + 4%, lagged one qtr
INFLATION LINKED	CPI + 4%	(3/4) * ILB benchmark + (1/4) * commodities benchmark [1]
Inflation Linked Bonds (ILB)	Custom Global ILB Index [2]	Revised list of included countries within the 1/3 non-U.S. allocation
Commodities	S&P GSCI Total Return	No change
INCOME	90.5% Barclays Long Liabilities [3] + 9.5% Barclays International Fixed Income	No change, except that the U.S. allocation changes from 90.5% to 90.0%
LIQUIDITY	NA	75% * Barclays Tsy 2-10 yr. + 25% * 1 month T-bill
Program		
Absolute Return	T-bill + 5%	No change
Opportunistic	Total fund benchmark	No change

1) The policy portfolio selected by the Investment Committee in December 2010 had 3% ILBs and 1% commodities (a 75%/25% ratio).
2) 2/3 Barclays Global Inflation Linked U.S. and 1/3 Barclays Global Inflation Linked France, Germany, Italy, Japan, and United Kingdom, currency unhedged.
3) Domestic fixed income sector weights = 40% U.S. government, 30% mortgage, 24% corporate investment grade, 3% corporate high yield, and 3% sovereign.

Criteria for Benchmark Selection

Benchmarks influence the composition and returns of the investment portfolio, and enable the measurement of value added from active management as well as the active risk taken relative to the benchmark. The recent completion of an Asset Liability Management (ALM) Workshop and approval of an asset reclassification provide a timely opportunity to review benchmarks.

An ideal benchmark would meet all the following criteria

1. Completeness – Accurate and comprehensive representation of the target investment opportunities
2. Investability – The securities in the benchmark index are available for trading at low cost
3. Clear rules – The method of identifying index security weights is clearly defined
4. Accurate and complete data – Information on performance and weights of the index securities is available
5. Low transaction costs – A portfolio can be managed that mimics the benchmark over time at low cost.

For publicly traded equity and fixed income portfolios, benchmarks that meet the above criteria are readily available from index providers.

For non-publicly traded investments, it is often difficult to identify a benchmark that satisfies all of these criteria. In these cases, when prioritization was necessary, the primary criterion for evaluating a candidate benchmark was completeness; the extent to which it accurately represents the characteristics of the target portfolio exposures such as country weightings and style (e.g. real estate core vs. non-core, fixed income sector).

In addition, a global benchmark index was generally preferred over a domestic one for the benefits of diversification across country asset markets and currencies and for expanding the investment opportunity set.

All proposed program benchmarks are currency unhedged, as foreign currency exposure of all programs is managed through a single total-fund currency overlay. The total fund benchmark return is the composite of asset class benchmark returns weighted at policy allocations, plus the benchmark return of the total fund currency overlay.

Global Equity (Public Equity)

The current Global Equity benchmark is a composite of 95% public equity index (Custom FTSE All World TMI Total Market Index) and 5% absolute return target for the Risk Managed Absolute Return (T-Bills + 5%).

Except for the exclusion of certain types of securities such as shares of tobacco companies, the weightings of securities in the Custom FTSE All World TMI are proportional to investable market capitalization and this index meets the criteria of a sound benchmark.

As discussed during the 2010 ALM review, the proposal is to transfer the Risk Managed Absolute Return (RMARS) program from Global Equity to a standalone program at the total fund. RMARS strategies consist of both long and short positions in stocks, bonds and other assets and the pattern of RMARS returns and risks have been distinct from that of Global Equity. Accordingly, the proposed change is to remove the RMARS benchmark (T-Bills + 5%) from the Global Equity benchmark.

AIM (Private Equity)

The current AIM benchmark is CalPERS Custom Wilshire 2500 Index + 3%, lagged one quarter. Given the timing of private equity market valuations, reported AIM benchmark and portfolio returns would continue to be lagged three months.

One proposed change to the AIM benchmark is to replace the Wilshire 2500 index with a composite of 2/3 FTSE U.S. Equity TMI + 1/3 FTSE All World exU.S. Equity TMI, currency unhedged. The 2/3 U.S. and 1/3 non-U.S. split would remain constant, unaffected by relative returns.

The proposed global AIM benchmark would more accurately represent the regional allocation of the AIM portfolio, which was recently 70% U.S. and 30% non-U.S. The proposed inclusion of a non-U.S. equity index would also better match AIM target allocations by region and the global investable opportunity set of private equity. According to one proxy of the private equity investment universe, all private equity funding from 2006 to 2010, the U.S. share was 56%. The proposed U.S. weight in the AIM benchmark, 67%, while exceeding the 56% U.S. share of the private equity global universe, is much closer than the 100% U.S. weight in the current AIM benchmark.

Adoption of FTSE indices for the AIM benchmark would also result in AIM and Global Equity benchmarks being more comparable, with a common index provider.

The proposed AIM benchmark retains a 3 percentage point premium to public market equity returns as compensation for the illiquidity and long horizon of private equity.

The private equity portfolio is benchmarked against a public market index. The values of private equity portfolio holdings are often unchanged over long periods while public market security prices fluctuate daily. The disparity in valuation frequency combined with appraisal-based valuation of private equity results in large AIM tracking error, the volatility of the difference between portfolio and benchmark returns, and suggests that the focus of AIM return assessments should be for periods of one year or longer.

Real Estate

The current Real Estate benchmark is a composite of a private Real Estate index and publicly traded REIT index, 90% (NCREIF Property Index + 2%) + 10% (FTSE EPRA NAREIT Developed). The proposed Real Estate benchmark is the NCREIF ODCE Index. The three associated benchmark changes are: replacing NCREIF NPI with NCREIF ODCE, eliminating the 2% return hurdle, and eliminating REITs.

The NCREIF ODCE Index is a composite of open-end commingled U.S. real estate funds with leverage up to 40%. Trading typically occurs four times per year at quarter-end. The ODCE appears to more accurately represent the target real estate investments since the ODCE:

- is more investable than the NPI, as investors may trade units of the commingled funds included in the ODCE index,
- is likely more accurately marked to market each quarter-end than NPI, because commingled fund investors demand accurate valuations for quarter-end trades, and
- contains leverage up to 40%, consistent with CalPERS target exposure, unlike NPI property returns which are unlevered.

While real estate non-core holdings are conceptually more accurately represented by the Townsend Value Add and Townsend Opportunistic indices, the limited depth and delayed reporting of these indices make implementation infeasible.

The proposed elimination of REITs from the Real Estate benchmark is motivated by the following:

- Diversification against public equity risk is a Real Estate strategic objective, and private real estate appears to be a better diversifier of equities,
- Real estate staff primary competency is core private real estate, not REIT selection or tactically timing REIT exposures,
- REITS are owned at market capitalization weights in the Global Equity portfolio, and
- Staff would retain the flexibility to gain additional REIT exposure via a total fund account or in the opportunistic portfolio.

<u>Real Estate Transition Benchmark</u>
The proposed interim Real Estate benchmark is a composite of the NCREIF ODCE and the current global equity REIT index (FTSE EPRA NAREIT Global). Each quarter, the benchmark weight of the REIT index weight would equal the actual weight of the REIT portfolio at the end of the prior quarter. The portfolio REIT allocation, currently 7%, is expected to decline to zero over the next one to three years, so during the subsequent quarter and beyond the Real Estate benchmark would be 100% NCREIF ODCE. This transition plan is gradual and responsive to market conditions.

Forestland
As approved by the Investment Committee last December, forestland and infrastructure will be transferred from Inflation-Linked to Real. This asset reclassification was motivated by evolving strategic roles of forestland and infrastructure from primarily an inflation hedge to a combination of inflation hedging, equity diversification, and source of cash inflow, as well as operational advantages of separating publicly traded assets from non-publicly traded investments.

The current forestland benchmark is a target real return (return net of CPI inflation), which is simple and represents the desired investment outcome. A target return, however, is not investable and does not represent the investments in forestland. Thus, it does not enable the measurement of whether the CalPERS forestland program is outperforming a representative basket of all institutional forestland investments.

The proposed benchmark of the CalPERS forestland program is the NCREIF Timberland Index. This index was the CalPERS timberland benchmark since the 1980s until it was changed to CPI + 5% in 2007, when the program was transferred to the Inflation Linked Asset Class (ILAC). The 2007 change in program benchmark was intended to highlight the strategic intent of the Inflation Linked Asset Class, while also being simple and identical to the infrastructure benchmark.

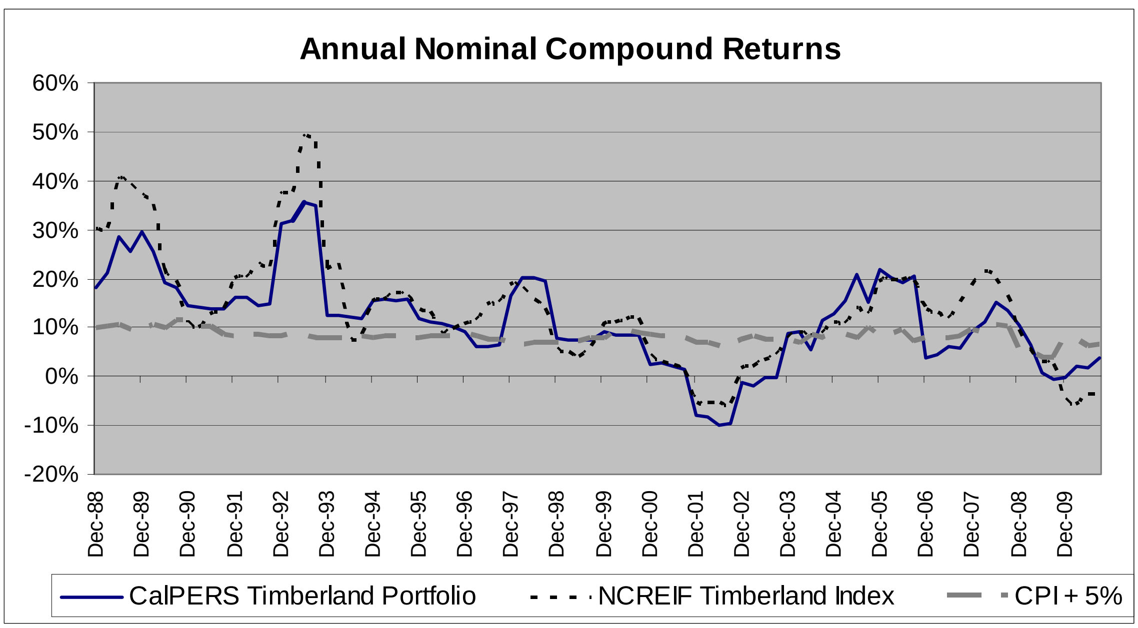
The NCREIF Timberland Index recently comprised 379 U.S. properties representing $24 billion market value, of which 70% is in the South and 25% in the Pacific Northwest (NCREIF.org 9-30-2010 report). It is a common benchmark for institutional U.S. timberland investments.

> “The NCREIF Timberland Index is a quarterly time series composite return measure of investment performance of a large pool of individual timber properties acquired in the private market for investment purposes only. All

properties in the Timberland Index have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment." (NCREIF.org; Jan. 6, 2010)

The NCREIF Timberland Index comprises timberland properties only, so it captures the cyclicality of timberland returns, and enables an assessment of value add. It also enables a comparison of the characteristics between CalPERS portfolio versus a representative portfolio of all U.S. timberland, such as regional exposures.

Versus a fixed real return index, the NCREIF Timberland Index more accurately represents the characteristics of the CalPERS timberland portfolio, as evident below by the similar pattern of returns.



Since March 1988, the correlation of quarterly returns against the reported CalPERS timberland returns has been positive 0.74 for the NCREIF Timberland Index and negative 0.10 for the current benchmark of CPI + 5%. Also the reported annualized volatilities of the CalPERS timberland program (10.1%) and the NCREIF Timberland Index (8.3%) have been comparable, while the standard deviation of quarterly inflation rates has been nearly zero since 1988. These measures further indicate that the NCREIF Timberland Index more accurately represents the CalPERS forestland portfolio.

Infrastructure
The proposed infrastructure benchmark, CPI + 4%, is slightly lower than the current benchmark of CPI + 5%. The lower threshold is:

1. Consistent with lower return expectations for asset classes established in the November 2010 ALM Workshop
2. Reflects an increased focus for the Infrastructure Program on low-risk (stable, income-generating) investments, consistent with its strategic role articulated in conjunction with the ALM Workshop

While the proposed real return benchmark is not investable and does not represent the target investments in infrastructure, it does provide a highly stable, inflation-linked target for the Program. It has been difficult to identify a clearly superior benchmark for this nascent investment strategy since a standard, representative benchmark for private infrastructure is not presently available.

Fixed Income
The proposal is to maintain the current Fixed Income benchmark, except for a reduction in the target U.S. allocation from 90.5% to 90.0%.

The current fixed income benchmark is a custom “long liability” index with fixed sector weights (Treasuries, corporate bonds, mortgages and others) with a duration of approximately seven years.
The standard U.S. fixed income benchmark for institutional investors, the Barclays Capital U.S. Aggregate Bond Index, has time-varying sector weights with a duration range of four to five years.

Constant sector weights confer the advantage of preventing one sector from becoming dominant, as occurred recently with mortgage backed securities. Also the longer duration results in higher expected returns and better hedging of CalPERS liabilities.

During the ALM review of 2010, the role of Treasury bonds as a strategic risk hedge was identified and a “Liquidity” portfolio consisting of Treasuries and Cash with a 4% target allocation was approved by the Committee. Retaining the existing Fixed Income benchmark would mean that Treasury bonds will be held in both the “Income” and the “Liquidity” portfolios. The Treasury bond holdings in the “Income” portfolio could vary within a wide range as with other sectors in an active sector selection strategy. In the “Liquidity” portfolio, the Treasury holdings will have a more strategic risk hedging role as well as providing liquidity.

Liquidity
Effective July 2011, Liquidity will replace Cash and have a 4% target allocation. The proposed Liquidity benchmark is 25% one-month Treasury Bills and 75% Barclays Treasury Index 2 to 10 years. This composite reflects the dual purpose of the Liquidity asset class to be a ready liquidity source and a market risk hedge.

Versus cash, the Liquidity asset class is expected to achieve higher returns, better hedge liabilities, and better hedge equity risks during noninflationary times. These roles are best met through longer-maturity securities.

The maturity range of 2 to 10 years was selected because Treasury securities with these maturities are highly liquid, large values can be traded quickly at small transaction costs. Also, during previous equity market downturns, Treasury securities with maturities between 5 to 10 years provided the lowest correlations with equity returns.

Inflation
The current Inflation benchmark, CPI + 4%, is not investable and does not accurately represent the target investments in commodities or inflation linked bonds.

Last December, the Investment Committee approved an Inflation Asset Class comprising 25% commodities and 75% inflation linked bonds (ILBs). The associated proposed Inflation Asset Class benchmark is 25% S&P GSCI Total Return Index and 75% Custom ILB benchmark.

The proposed custom ILB benchmark would continue to be 2/3 U.S. and 1/3 non-U.S. In general, a country will be included in the ILB benchmark if the market value of its ILBs exceeds 3% of global ILBs. This rule results in the addition of Canada. Japan will be removed from the ILB benchmark because of illiquidity and its ILB weighting, while slightly above 3%, is declining due to limited issuance. The five countries initially included in the non-U.S. portion of the ILB index, in order of allocation, would be United Kingdom, France, Italy, Germany, and Canada.

ILB benchmark weightings of the non-US countries would continue to be proportional to country ILB market capitalizations according to the Barclays Global ILB Index.

V. STRATEGIC PLAN:

This item addresses Strategic Plan Goals VIII, manage the risk and volatility of assets and liabilities to ensure sufficient funds are available, first, to pay benefits and second, to minimize and stabilize contributions; and IX, achieve long-term, sustainable, risk adjusted returns.

VI. RESULTS/COSTS:

Implementation costs are expected to be smallest if the new benchmarks are implemented concurrently with the adoption of the new strategic asset allocation, and both are scheduled for July 2011.

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